USSR

UDC 547.792.3:541.127.1

PEVZNER, M. S., SAMARENKO, V. YA., and BAGAL, L. I., Leningrad Technological Institute imeni Lensovet, Leningrad

"Heterocyclic Nitro Compounds. XV. Kinetics of the Reaction of 1-Methyl-3-nitro-5-halo-1,2,4-triazoles with Hydroxyl Anions"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 72, pp 848-851

Abstract: The kinetics of the reaction of 1-methyl-3-nitro-5-chloro- and 1-methyl-3-nitro-5-bromo-1,2,4-triazole with hydroxyl ions were studied. The reactivity of the substituents increased from $NO_2$ to Cl and Br, both of which reacted at approximately the same rate. The ratio of the rate constant of substitution of the halogen atom to that of the $NO_2$ group was equal to 30:1.

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1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--HETEROCYCLIC NITRO COMPOUNDS. V. 1,METHYL,3,NITRO,5,ALKOXY AND PHENOXY,1,2,4,TRIAZOLES -U-
AUTHOR-(04)-BAGAL, L.I., PEVZNER, M.S., SAMARENKO, V.YA., YEGOROV, A.P.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (5), 702-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HETEROCYCLIC NITROGEN COMPOUND, ORGANIC NITRO COMPOUND, ORGANIC AZOLE COMPOUND, KETONE, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1027 STEP NO--UR/0409/70/000/005/0702/0704

CIRC ACCESSION NO--AP0134739
UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202810002-4"

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134739

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ET SUB3 N (1.6 ML) WAS ADDED TO 2 G 1,METHYL,3,5,DINITRO,1,2,4,TRIAZOLE (I) IN 50 ML MEOH AT 50DEGREES AND THE MIXT. HEATED 2 HR AT 60-70DEGREES TO GIVE 71PERCENT 1,METHYL,3,NITRO,5,ALKOXY,1,2,4,TRIAZOLE (II) (ALKYL EQUALS ME) (III), M. 146DEGREES (ETOH). SIMILARLY, II (ALKYL EQUALS ET AND PR), M. 75DEGREES (ETOH), AND 38DEGREES (PETROLEUM ETHER), RESP., WERE PREPD. I (2 G) IN 15 ML DIOXANE AND 3 ML H SUB2 O AND 1.09 G PHOH IN 4 ML DIOXANE WAS HEATED 3 HR AT 65-70DEGREES TO GIVE 51PERCENT II (ALKYL EQUALS PH), M. 124.5DEGREES (CCL SUB4 PETROLEUM ETHER). SIMILARLY, 72PERCENT II (ALKYL EQUALS H AND P,O SUB2 NC SUB6 H SUB4), M. 154.5DEGREES AND 173DEGREES (BOTH FROM C SUB2 H SUB4 CL SUB2 ET SUB2 O), RESP., WERE PREPD. III TREATED WITH HBR IN ACOH GAVE 25PERCENT 1,METHYL,3,BROMO,1,2,4,TRIAZOL,5,ONE, M. 225DEGREES (C SUB2 H SUB4 CL SUB2). FACILITY: LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

AP0100368 CHEMICAL ABST. 5/70 Ref. Code: 4R0409

111380e **Heterocyclic nitro compounds. III. Interaction of nitro derivatives of 1,2,4-triazole with aliphatic amines.** Bagul, L. I.; Pevzner, M. S.; Samarenko, V. Ya. (Leningrad. Tekhnol. Inst. im. Lensoveta, Leningrad, USSR). *Khim. Geterotsikl. Soedin.* 1970, (2), 269–74 (Russ). 1-Methyl-3,5-dinitro-1,2,4-triazole (I) reacts with aliphatic amines by replacement of the $NO_2$ group in the 5-position by the amine residue. I (4 g) heated with 100 ml 25% $NH_4OH$ in an autoclave 4 hr at 70–80° gave 5-amino-1-methyl-3-nitro-1,2,4-triazole (II), m. 254–6°; *N*-Ac deriv. m. 172–3°. II treated with 10% $H_2SO_4$ at 0°, followed by aq. $NaNO_2$ gave 1-methyl-3-nitro-5-nitrosamino-1,2,4-triazole, m. 78°. To 70 ml concd. $H_2SO_4$ was added at 0° 3 g $NaNO_2$ followed by 29 g $NaH_2PO_2$ in 50 ml 30% $H_2SO_4$, and 3 g II in 200 ml AcOH, and the mixt. held 1 day at 0° to yield 22% 1-methyl-3-nitro-1,2,4-triazole, m. 62–3°. I in dioxane heated with 20% aq. $MeNH_2$ 1 hr at 80° gave 1-methyl-3-nitro-5-methylamino-1,2,4-triazole (III), m. 207–8°; similarly were prepd. the following analogs (5-amino groups shown): $CH_2$:CHNH, m. 68–9°; $Me_2N$, m. 109°; $Et_2N$, m. 47.5–8°; aziridino, m. 114–15°; and piperidino, m. 120–1.5°. Hydrogenation of III in EtOH over Pd-C gave 1-methyl-5-methylamino-3-amino-1,2,4-triazole (IV),

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m. 170°; similarly was prepd. the 5-dimethylamino analog, m. 136.5°. IV and $NaH_2PO_2$ treated with aq. HCl and $NaNO_2$ overnight gave 1-methyl-5-methylamino-1,2,4-triazole, isolated as the picrate, m. 211–12°, also formed from 1-methyl-5-nitro-1,2,4-triazole and aq. $MeNH_2$ in aq. dioxane in 10 hr at 75°; similarly was prepd. 1-methyl-5-dimethylamino-1,2,4-triazole (V) picrate, m. 152–3°. Heating $Me_2NCSNH_2$ in EtOH with MeI 2 hr, gave 89% $Me_2NC(NH_2)$:SMe.I, m. 97–8°, which heated 16 hr in EtOH with $MeNHNH_2$ gave 1,1,3-trimethyl-3-amino-guanidine-HI, which with 88% $HCO_2H$ heated 40 hr at 110° gave 79% V, isolated as the picrate. Holding 1-methyl-3-nitro-5-aziridino-1,2,4-triazole with concd. HCl in dioxane 1 hr, gave 1-methyl-3-nitro-5-(2-chloroethylamino)-1,2,4-triazole, m. 130°. Heating I with $Et_3N$ in aq. dioxane 4 hr gave 1-methyl-3-nitro-1,2,4-triazol-5-one, decompd. 229°, also obtained from the aq. filtrate in the prepn. of II after treatment with 5% $H_2SO_4$. The purification of the products was best done on a thin layer of $Al_2O_3$.

G. M. Kosolapoff

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USSR

UDC 621.438.62.752

SAMARIN, A. A.

"On the Oscillation Problem of Parts of Turbojet Engines Containing Structural Dampers of Laminated Bar Type"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 2, 1973, pp 111-115

Abstract: A study was made of the problem of determining the energy degradation of oscillations in a two-layer bar of lengthwise arbitrary variable section. The layers of the bar are tightened with each other by a lengthwise variable pressure. Coulomb's law of dry friction occurs on the conjugation surface of the layers. Contrary to the well-known quasi-static approach to similar problems, inertia forces are considered in solving the problem. Providing the oscillations of the bar layers are synphasal, an expression was derived for the determination of mutual slippages of the layers , from which formulas, given by other authors for bars of constant section, are deduced as special cases. It is demonstrated that it is convenient to apply the quality function of works of external disturbing forces and of friction

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USSR

SAMARIN, A. A., Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 2, 1973, pp 111-115

forces on the conjugation surface of the layers for the determination of resonance deflections of laminated bars. By the suggested method, the effectiveness of structural damping of oscillations of laminated bars of arbitrary variable section can be evaluated. The results of the calculation of resonance deflections of a two-layer bar of variable section are illustrated. Four figures, eleven formulas, three bibliographic references.

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Acc. Nr: A P0 044842 Ref. Code: UR 0531

PRIMARY SOURCE: Khirurgiya, 1970, Nr 1, pp 54-57

S

# THE UTILIZATION OF THE SUBCLAVIAN VEIN FOR TRANSFUSIONS

*A. G. Samarin*

The author discusses the topography of the subclavian vein and studied the technique of puncture on 35 cadavers of adults and children. Puncture was performed 25 times in 20 patients for short-term and prolonged transfusions, as well as for measurement of the central venous pressure during the operation. No complications during punctures and transfusions were observed. In the author's opinion prolonged introduction of medicinal substances into the subclavian vein is safe, tolerable for patients and technically simple.

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REEL/FRAME
19771697

Instrumentation and Equipment

UDC 669.01

USSR

TSILOSANI, A. G., KASHIN, V. I., and SAMARIN, A. M., (DECEASED), Moscow

"Installation for Melting Refractory Metals in a Controlled Atmosphere"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 147-149.

Abstract: A device has been developed for studying processes of melting and interaction of liquid refractory metals with gasses. The metal is melted on an air-cooled base using a gas-stabilized electric arc. The installation is capable of melting the most refractory metals and holding them in the liquid state for as long as necessary for chemical reactions to occur: for example, liquid tungsten was held at 3500°C for 7.5-8.0 min. The device consists of the body, stage supporting metal being studied, upper electrode, electrode movement mechanism, evacuation system, gas mixture preparation and input system, power supply and measurement apparatus.

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202810002-4"

USSR

UDC 539.89 + 532.78

BERTMAN, A. A., YEPANCHINTSEV, O. G., Academician SAMARIN, A. M. (deceased), CHERPOV, D. B. and SHENYAYEV, A. Ya., Institute of Metallurgy imeni A. A. Baykov, Abademy of Sciences USSR

"Structure and Properties of Cast Iron Crystallized under High Pressure"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol. 195, No. 1, p 67-70, 1970

Abstract: Experiments have shown that pressures of the order of 1000 atmospheres applied to melts during cooling markedly affect crystallization of metal and improves its structure. This is especially true for alloys, including cast iron, having so-called colloidal microinhomogeneities. The structure and properties of cast iron melted and crystallized under pressures of 3 to 30 kbar are studied. Barothermic tests were made on gray cast iron having the eutectic composition of 3.8% C, 2% Si, 0.3% Mn, 0.25% S, and 0.15%P. The sample was heated to 1200°C under 30 kbar pressure. The test pressure was applied by a 200-ton press and was reached in 3 minutes, whereupon the sample was heated. The sample melted at approximately 1190°C and was held at 1200°C for 1 to 2 minutes. Then the sample was cooled slowly (~ 3 deg/sec) or rapidly (~ 200 deg/sec) to room temperature.

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BERTMAN, A. A., et al, Doklady Akademii Nauk SSSR, Vol. 195, No. 1, pp 67-70, 1970

Pressure was then removed. The initial structure of the samples was perlitic, with branching inclusions of graphite. After barothermic processing, the graphite inclusions disappeared. Slowly-cooled samples exhibited a structure typical of pre-eutectic white cast iron with primary austenitic dendrites and ledeburite. Elevated pressure noticeably increases the quantity of austenite and produces a fine structure. Metallographic analysis showed a dark component at the boundaries of the austenite dendrites and fine inclusions of a light phase. The dark phase was enriched with Si; and the light, with Mn. Both contained carbon. The structure of the fast-cooled sample resembled tempered steel and had dark needle-like components reminiscent of martensite. The hardness of the slowly-cooled samples increased by a factor of almost 3 as compared to the original metal, and wear resistance increased sharply. Orig. art. has 8 refs.

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1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--DEOXIDIZING POWER OF CARBON IN MOLTEN MOLYBDENUM -U-

AUTHOR-(03)-KOZINA, L.N., REVYAKIN, A.V., SAMARIN, A.M.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.-APR. 1970, (2), 116-118

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MOLYBDENUM, LIQUID METAL, METAL DEOXIDATION, CARBON, CARBON MONOXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0370/70/000/002/0116/0118

PROXY REEL/FRAME--3003/1445

CIRC ACCESSION NO--AP0130378 UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 026

CIRC ACCESSION NO--AP0130378

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEOXIDIZING EFFECT OF C IN MOLTEN MO IS DISCUSSED THEORETICALLY AND ON THE BASIS OF AN ANALYSIS OF EXPERIMENTAL DATA, WITH SPECIAL REF. TO THE INTERACTION BETWEEN GASEOUS CO AND THE MOLTEN METAL AT TEMP. CLOSE TO THE M.P. THE EQUILIBRIUM CONSTANT OF THE REACTION CO EQUALS C PLUS O IS 1.5 TIMES 10 PRIME NEGATIVE5 (AT. PARTS-ATM) PRIME2. THE PRODUCT OF THE ACTIVITY COEFF. OF C AND O IN MOLTEN MO IS 0.045.

UNCLASSIFIED

1/2 039 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--THERMODYNAMIC ANALYSIS OF THE DEOXDIATION OF MOLTEN MOLYBDENUM -U-

AUTHOR-(03)-KOZINA, L.N., REVYAKIN, A.V., SAMARIN, A.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR, 1970, 190(4), 909-11

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--THERMODYNAMIC ANALYSIS, METAL DEOXIDATION, MOLYBDENUM, PLASTICITY, ALLOY ADDITIVE, CARBON, ZIRCONIUM OXIDE, ALUMINUM OXIDE, TITANIUM DIOXIDE, CERIUM OXIDE, NIOBIUM OXIDE, LANTHANUM OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0279 STEP NO--UR/0020/70/190/004/0909/0911

CIRC ACCESSION NO--AT0055072

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

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CIRC ACCESSION NO--AT0055072
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT HIGH TEMPS. MO-O SYSTEM FORMS MOO, MOO SUB2, AND MOO SUB3 HAVING DELTA HOEGREES SUBO 99.30, 12.80, AND MINUS 78.20 KCAL-MOLE, RESP.; AND HAVING MINUS(F SUBTDEGREES MINUS H SUBODEGREES)-T EQUAL 71.45, 84.38, 90.31 CAL-DEGREE-MOLE. COMPN. OF VAPOR PHASE ABOVE MO-O SYSTEM AT DIFFERENT O CONCNS. IS GIVEN. DEOXIDN. OF MO-O SYSTEM WAS STUDIED IN THE PRESENCE OF MANY ADDITIVES (NB SUB2 O SUB5, CEO SUB2, TIO SUB2, AL SUB2 O SUB3, CE SUB2 O SUB3, ZRO SUB2, LA SUB2 O SUB3, AND C). IN GENERAL, THE MENTIONED METAL OXIDES INCREASE PLASTICITY OF MO METAL OWING TO THEIR INTERACTION IN THE PROCESS OF MO CRYSTN. AND NOT OWING TO MO DEOXION. PROCESS. C IS THE BEST DEOXIDIZING ELEMENT.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--FORMATION OF PRODUCTS OF IRON DEOXIDATION BY ALUMINUM -U-

AUTHOR-(04)-VERTMAN, A.A., GONGADZE, G.A., MEHEDLISHVILI, V.A., SAMARIN, A.M.
COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 17-22

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--IRON, STEEL DEOXIDATION, ALUMINUM CONTAINING STEEL, NONMETALLIC INCLUSION, ALUMINUM OXIDE, METALLOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0167 STEP NO--UR/0370/70/000/001/0017/0022

CIRC ACCESSION NO--AP0054963
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

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CIRC ACCESSION NO--AP0054963

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ARMCO FE, CONTG. C 0.008, SI 0.001, MN 0.04, AND O 0.18PERCENT AND AL IN BARS WERE USED. THE SPECIMENS WERE MELTED IN A FURNACE WITH AR ATM. AT THE WORKING TEMP. 1600DEGREES A PIECE OF PURE AL (0.4 G) WAS ADDED TO THE SURFACE OF MOLTEN IRON. THE DURATION OF HEAT AND TEMP. WAS CHANGED DURING THE TESTS. THE CRUCIBLE WITH METAL WAS COOLED IN THE AR. SECTIONS OF THE INGOTS WERE STUDIED BY MICROANAL. WITH THE AIM TO DET. THE AL DISTRIBUTION ALONG THE HEIGHT OF THE SPECIMEN, THE REACTION DEPTHS BETWEEN THE DIFFUSING AL AND THE O IN THE METAL, AND FOR THE DETN. OF THE CONTENT OF NONMETALLIC INCLUSIONS. METALLOGRAPHIC STUDIES WERE ALSO CARRIED OUT. SEVERAL TYPES OF INCLUSIONS WERE STUDIED: LARGE LIQ. INCLUSIONS OF GLOBULAR FORM, COMPOSED OF MGAL SUB2 O SUB4, AL SUB2 O SUB3, DENDRITES AND FINE GRAINS OF ALUMINUM OXIDE. THE FORMATION OF GLOBULAR INCLUSIONS OF AL SUB2 O SUB3 WAS CAUSED BY THE EFFECT OF LIQ. PRODUCTS OF DEOXIDN. ON AL RESULTING IN THE FORMATION OF HARD SURFACE LAYER OF AL SUB2 O SUB3.

UNCLASSIFIED

Acc. Nr: AP0043723 Abstracting Service: 5/70 INTERNAT. AEROSPACE ABST. Ref. Code: UR0370

A70-23784 # Solubility of oxygen in liquid molybdenum (O rastvorimosti kisloroda v zhidkom molibdene). L. N. Korina, A. V. Reviakin, and A. M. Samarin. *Akademiia Nauk SSSR, Izvestiia, Metally*, Jan.-Feb. 1970, p. 56-64. 8 refs. In Russian.

Development of a method of determining the solubility of oxygen in liquid molybdenum in the presence of volatile oxides. It is shown that the oxygen concentration at the surface of the metal can be determined on the basis of an analysis of the mass transfer processes occurring during oxidation of molybdenum. The equilibrium constant of the reaction of dissolution of oxygen in liquid molybdenum at 3000 K is determined. A.B.K.

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REEL/FRAME 19770129

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Acc. Nr.: AN0107007 Ref. Code: UR9025

TITLE-- /OBITUARY/

NEWSPAPER-- TRUD, MAY 21, 1970, P 3, COL 7

ABSTRACT-- ALEKSANDR MIKHAYLOVICH SAMARIN, HEAD OF THE INSTITUTE OF METALLURGY IMENI BAYKOV, ACADEMICIAN, MEMBER OF THE STATE COMMITTEE FOR SCIENCE AND TECHNOLOGY, MEMBER OF THE VTSSPS, VICE PRESIDENT OF THE WORLD,S FEDERATION OF ENGINEERING SOCIETIES, AND MEMBER OF VARIOUS STATE AND ACADEMIC SCIENCE COUNCILS, HAS DIED.

BORN IN 1902, HE GRADUATED IN 1930 FROM THE MOSCOW MINING ACADEMY. SAMARIN WAS A MEMBER OF THE COMMUNIST PARTY SINCE 1925. THE RESEARCH ACTIVITY OF SAMARIN WAS ASSOCIATED WITH THE MOSCOW INSTITUTE OF STEEL WHERE HE DID RESEARCH AND TAUGHT FOR 30 YEARS.

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Acc. Nr.: AN0107007

FOR FIVE YEARS SAMARIN HELD POSTS OF DEPUTY MINISTER OF HIGHER AND MIDDLE SPECIALIZED EDUCATION, U.S.S.R., DEPUTY CHAIRMAN OF THE STATE COMMITTEE FOR THE COORDINATION OF RESEARCH, U.S.S.R., AND OTHER IMPORTANT POSITIONS.

SAMARIN AUTHORED MORE THAN 400 PAPERS, INVENTIONS AND MONOGRAPHS, AND WAS AWARDED THE ORDER OF LENIN, TWO ORDERS OF THE LABOR RED STAR AND MEDALS.

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Reel/Frame
19890394

## Instrumentation and Equipment

USSR

UDC 669.01

TSILOSANI, A. G., KASHIN, V. I., and SAMARIN, A. M., (DECEASED), Moscow

"Installation for Melting Refractory Metals in a Controlled Atmosphere"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 147-149.

Abstract: A device has been developed for studying processes of melting and interaction of liquid refractory metals with gasses. The metal is melted on an air-cooled base using a gas-stabilized electric arc. The installation is capable of melting the most refractory metals and holding them in the liquid state for as long as necessary for chemical reactions to occur: for example, liquid tungsten was held at 3500°C for 7.5-8.0 min. The device consists of the body, stage supporting metal being studied, upper electrode, electrode movement mechanism, evacuation system, gas mixture preparation and input system, power supply and measurement apparatus.

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USSR UDC 669.245'28:669.245'27

FEDORCHENKO, V. I., AVERIN, V. V., and SAMARIN, A. M. (deceased), Moscow

"Effect of Titanium on Nitrogen Solubility and Activity in Ni-Mo and Ni-W Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 3, May-Jun 71, pp 73-77

Abstract: An investigation was made of the thermodynamics and kinetics of the interaction between nitrogen and Ni-Mo and Ni-W alloys containing titanium in order to determine the effect of titanium on the behavior of nitrogen in alloys. The nitrogen solubility in Ni+20at% Mo and Ni+20at%W alloys with a titanium content from 0 to 2.28 wt% and from 0-1.65wt%, respectively, was determined at 1600° C as a function of pressure. The results show that the formation of titanium nitride in Ni-W alloys takes place at lower pressure values and titanium concentrations than in Ni-Mo alloys. This is governed by increased titanium activity in Ni-W in comparison with the Ni-Mo alloy. The linear dependence of nitrogen solubility on the square root of the pressure attests to the fact that in alloys containing a nitride forming element, nitrogen solubilizes in monatomic form. A formula is derived for determining the nitrogen activity coefficient $f_n$, and its dependence on titanium concentration is plotted in $lfg_n$-Ti% coordinates.

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UDC 532.74

USSR

VERTMAN, A. A., IZMAYLOV, V. A. and SAMARIN, A. M., Academician

"Centrifuging of Siluminum in the Liquid State"

Moscow, Doklady Akademii Nauk SSSR, Vol. 190, No. 2, 1970, pp 313-314

Abstract: An alloy of aluminum and silicon was centrifuged in a high-temperature vacuum device in order to obtain information on the structure of the alloy. The siluminum samples were centrifuged at temperatures of 700 and 850°C. The samples were analyzed for silicon content by a weighing method along the longitudinal axis. The distribution of silicon in the samples of both series is graphed. Analysis shows that the effect of crystallization on the separation of the components of the alloy in the centrifuged field was slight under these experimental conditions. Increasing the temperature from 700 to 850° reduced the degree of separation of the components of the luminum-silicon system. It is concluded that this effect is possible only if one assumes the presence in the Al-Si system of dynamic subgroups enriched by one of the components of dimension $r$ = 10-50 Å. These results should be considered in studying the modification and crystallization of silumins.

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JPRS 50083
UDC 532.74

USSR

VERTMAN, A. A., IZMAYLOV, V. A. and SAMARIN, A. M., Academician

"Centrifuging of Siluminum in the Liquid State"

Moscow, Doklady Akademii Nauk SSSR, Vol. 190, No. 2, 1970, pp 313-314

Abstract: An alloy of aluminum and silicon was centrifuged in a high-temperature vacuum device in order to obtain information on the structure of the alloy. The siluminum samples were centrifuged at temperatures of 700 and 850°C. The samples were analyzed for silicon content by a weighing method along the longitudinal axis. The distribution of silicon in the samples of both series is graphed. Analysis shows that the effect of crystallization on the separation of the components of the alloy in the centrifuged field was slight under these experimental conditions. Increasing the temperature from 700 to 850° reduced the degree of separation of the components

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of the luminum-silicon system. It is concluded that this effect is possible only if one assumes the presence in the Al-Si system of dynamic subgroups enriched by one of the components of dimension $r$ = 10-50 Å. These results should be considered in studying the modification and crystallization of silumins.

19701693

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UDC 621.375.82

USSR

KIDYAROV, B. I., KRIVOSHCHEKOV, G. V., MITNITSKIY, P. L., SAMARIN, V. I., STROGANOV, V. I., TARASOV, V. M.

"Dispersion of Wave Synchrony in a $LiIO_3$ Crystal"

V sb. Nelineyn. protsessy v optike (Nonlinear Processes in Optics—collection of works), Vyp. 2, Novosibirsk, 1972, pp 399-407 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D858)

Translation: A study is made of the dependence of the nonlinear characteristics of $LiIO_3$ on the frequency in order to discover new possibilities of applying this crystal for cascade laser emission frequency multipliers. The $LiIO_3$ crystals in the hexagonal version were grown from an aqueous solution containing 10% $HIO_3$ with respect to $LiIO_3$. The nonlinear characteristics of the crystal were investigated by means of a glass Nd-laser with a broad generation spectrum of 0.008 Å. An experimental check was made of the intensity of the excited second harmonic as a function of the wavelength of the radiation propagated along the direction of synchrony. A study was also made of the dependence of the intensity of the second harmonic on the pumping beam deflection from the direction of synchrony. When determining the magnitude of $d\theta_c/d\lambda$, additional possibilities for a nonlinear frequency discriminator were discovered. The bibliography has 7 entries.

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USSR UDC 621.375.8

KRIVOSHCHEKOV, G. V., SAMARIN, V. I., STROGANOV, V. I., and TARASOV, V. M.

"Cascaded Frequency Transformation of Laser Radiation in Nonlinear Crystals"

Novosibirsk, Avtometriya, No 5, 1972, pp 106-112

Abstract: An important problem in laser physics is finding means of increasing the range of the radiation. The purpose of this paper is to indicate the possibilities in cascaded frequency transformation of laser devices for setting up powerful sources of coherent ultraviolet radiation. The authors begin their analysis of laser spectral conversion with a system of heterogeneous differential equations describing the radiation in nonlinear crystals with the approximation of slow amplitudes for plane waves in a quasi-stationary process. Recognizing that the process of successive frequency conversions is the same as in excitation of the second harmonic and the composite frequencies, the authors derive expressions for the amplitudes of those waves, assuming that the synchronism condition has been satisfied. A table is given of various

USSR

KRIVOSHCHEKOV, G. V., et al, Avtometriya, No 5, 1972, pp 106-112

crystals and their parameters, together with bibliography references. Cascaded frequency conversion yields a wavelength of 0.353 microns, representing the third harmonic, in a laser with neodymium glass, at a power of more than 30 MW and with a conversion factor of 4%, as well as fourth and fifth harmonics of 0.265 and 0.212 microns in wavelength respectively. The author notes that many questions of the optimization of pumping source parameters and the process itself still must be resolved before the advantages of cascaded frequency transformation can be realized.

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USSR

UDC 681.3.06:51

ARONOV, V. I., NEVEL'SKAYA, E. Ya., SAMARIN, V. S.

"Systems for Retrieval and Statistical Processing of Geological Information by Digital Computer"

Tr. Vses. n.-i Geologorazved. Neft. In-t [Works of All-Union Scientific Institute for Geological Prospecting and Petroleum], No 103, 1971, pp 15-27, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V788 by the author's).

Translation: This work is dedicated to description of the algorithm of a system for retrieval and statistical processing of geological information realized on a BESM-4 type machine. The system allows sampling from the initial material according to an assignment and statistical processing of the sample (calculation of estimates of central moments, determination of the type of distribution, performance of multidimensional correlation and regression analysis). The system calls for the use of a broad set of types of coupling and the possibility of complete listing of combinations of parameters and functions of them.

1/1

USSR

UDC 536.532.089.6

OSTRONOV, M. G., SAMARIN, Yu. B. and KOLOSHINA, V. N.

"Measurement of Small Low-Temperature Differences"

Moscow, Izmerital'naya Tekhnika, No 6, 1972, p 48

Abstract: A manganin-constantan thermocouple has been produced for the measurement of small low-temperature differences. Results of calibration of the thermocouple within the temperature range from 273-73° K are presented in a table. It is shown that the electromotive force of the thermocouple is close to the emf of a copper-constantan thermocouple, and that the thermal conductivity of the manganin-constantan thermocouple is 1 or 2 orders of magnitude lower than that of a copper-constantan thermocouple. The manganin-constantan thermocouple may be recommended for the measurement of small low-temperature differences in adiabatic microcalorimeters. 1 table. 4 references.

1/1

USSR

UDC 669.24'26:539.376

MATVEYEVA, M. P., and SAMARINA, A. M., Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR

"Failure of Two-Phase Chromium-Nickel Alloy Due to Creep"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1972, pp 58-59

Abstract: Cited here are creep test data on a Cr-Ni alloy (60 and 40%, respectively). The microstructure of broken specimens tested at 1000°C under various stresses showed pores, cavities, cracks, and tears. The surface showed a layer of scale. A specimen of the alloy with an addition of yttrium tested at 1000°C under 2.5 kg/mm$^2$ stress showed greater elongation. The overall test results of the alloy indicate its low plasticity and low resistance to creep. The elongation caused by creep is attributed to the inadequate plastic deformation of one of the phases and, to a greater extent, to the formation of micropores and cracks propagating slowly at the interphase boundaries. (3 bibliographic references)

1/1

1/2 027 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--FORMATION OF STRUCTURE DURING THE ROLLING AND ANNEALING OF CAST CRYSTALS OF TRANSFORMER STEEL -U-

AUTHOR-(04)-MOLOTILOV, B.V., POTEMKINA, V.F., SAMARINA, N.M., CHERVONENKOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 245-8

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR, PHYSICS

TOPIC TAGS--TRANSFORMER STEEL, ANNEALING, METAL SINGLE CRYSTAL, IRON ALLOY, COLD ROLLING, HOT ROLLING, CRYSTAL DISLOCATION, METAL TEXTURE, CRYSTAL GROWING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0167 STEP NO--UR/0048/70/034/002/0245/0248

CIRC ACCESSION NO--AP0115891

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0115891

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINGLE CRYSTALS OF SILICIDED FE WERE GROWN FROM THE MELT BY CZOCHRALSKI'S METHOD. SAMPLES FOR HOT AND COLD ROLLING WERE CUT FROM THE CRYSTALS. THE STUDY OF THE (110) (001) CRYSTALS AFTER COLD ROLLING WITH 5PERCENT DEFORMATION SHOWED THAT THE PLASTIC STRAIN OCCURS BY TWINNING AND SLIP. AFTER 80PERCENT STRAIN BANDS WITH AN ELEVATED DISLOCATION D. APPEAR VISIBLY IN THE STRUCTURE. THE TEXTURE OF HOT ROLLED CRYSTALS DEPENDS ON THE TEMP. OF ROLLING AND THE DEGREE OF DEFORMATION. BY SUITABLY CHOOSING THE ROLLING CONDITIONS THE INITIAL ORIENTATION OF THE SINGLE CRYSTALS CAN BE PRESERVED DURING HOT ROLLING. FACILITY: TSNIICHM IM. BARDINA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 621.165.539.4

SHESHENEV, M. F., Candidate of Technical Sciences, and SHKOL'NIKOVA, B. E., and SAMARINA, N. N., Engineers, All-Union Institute of Heat Engineering and Central Scientific Research Institute for Heavy Machine Building

"Use of Type-15Kh12V2K2MF 12% Chrome Steel for Turbine Blades"

Moscow, Teploenergetika, No 5, 1972, pp 74-76

Abstract: It has been found that the main reason for rupture of turbine blades is vibration fatigue resulting rom the operation of the blades in resonant modes. This work presents the results of the study of the metal of two 0.5-t pilot-scale melts of E1756K steel, containing 0.13-0.16% C, 12.3-12.6% Cr, 0.66-0.73% Mo, 1.8-2.0% W, 0.3% V, 1.7% Co, 0.35-0.42% Si, 0.89-0.76% Mn, 0.06-0.015% S, and 0.017-0.024% P. Heat-treated rods 30 mm in diameter were tested. The properties of the material were found to be quite promising for the manufacture of turbine blades. The steel has good heat resistance and fatigue characteristic at 600°C. The long-term strength over 10,000 hours is 17-18 kg/mm², 100,000 hours--14 kg/mm². The minimum relative elongation in long-term rupture was 9%. The creep limit at this temperature for a deformation rate of 1% in $10^5$ hr is about 7.5 kg/mm². The fatigue limit at 600°C with a symmetrical loading cycle is 24 kg/mm² for smooth specimens, 15 kg/mm² for notched specimens ($10^8$ cycles). The attenuation decrement at 600°C is approximately twice that at 200°C.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PECULIARITIES OF PLACING AND QUANTITY OF SOME PREDATORY MAMMALS OF THE MIDDLE DNIEPER AREA -U-

AUTHOR-(02)-BCYKO, N.YA., SAMARKIY, S.L.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK ZOOLOGII, 1970, NR 3, PP 14-20

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MAMMAL, POPULATION LEVEL, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0423 STEP NO--UR/0575/70/000/003/0014/0020

CIRC ACCESSION NO--AP0126176

UNCLASSIFIED

2/2 011 UNCLASSIFIED

CIRC ACCESSION NO--AP0126176 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PECULIARITIES OF PLACING AND QUANTITY OF PREDATORY MAMMALS WERE INVESTIGATED AT THE THERRITORY OF THE MIDDLE DNIEPER AREA. IT WAS ESTABLISHED THAT QUANTITY AND DENSITY OF POPULATIONS OF PREDATORY MAMMALS IS DETERMINED BY THE PRESENCE OF OPTIMAL PROTECTING CONDITIONS, STABLE FOOD RESERVE AND DEGREE OF HUNTING. VULPES VULPES, MARTES FONIA, MUSTELLA PUTORIUS AND OTHER ANIMALS ACCOMODATED TO THE EXISTENCE IN CULTURAL LANDSCAPE. THEY FIND HERE SHELTERS AND A SUFFICIENT AMOUNT OF FOOD. MELES MELES, MARTES MARTES AND MUSTELLA EVERSMANNI AS A RESULT OF DETERIORATION OF PROTECTING CONDITIONS AND INTENSIVE HUNTING ARE MET RARELY AT THE INVESTIGATED TERRITORY AND REQUIRE A STRICT PROTECTION.

FACILITY: THE PEDAGOGICAL INSTITUTE, CHERKASSY.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202810002-4"

USSR

UDC 669.295.018.9(088.8)

GAMELKIN, B. S., GOLIKOV, V. V., OGURTSOV, S. V., NEPOMNYASHCHIY, I. V., SAMAROV, M. A., SAVIKIN, V. I., and RODNYY, M. I.

"Method of Producing Alloys of Titanium With Refractory Metals"

USSR Author's Certificate No 258598, Filed 28/01/67, Published 30/04/70 (Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract No 2 G197 P)

Translation: A method is suggested for producing alloys of Ti with refractory metals by metallothermic reduction of preliminarily prepared solutions of chlorides of the alloying metals to $TiCl_4$. To increase the homogeneity and quality of the alloys produced, the chloride solutions are heated to a temperature above the boiling point of the solution before the reduction process.

UDC 534.141

USSR

SAMAROV, N. G., Moscow

"Causes of Vibrations in Systems With Several Degrees of Freedom"

Kiev, Prikladnaya mekhanika, No. 11, Nov 71, pp 28-32

Abstract: It is shown that in systems with $n$ degrees of freedom the amplitudes of oscillations in the range of the $n$-th critical velocity are proportional to the induced frequency of oscillations in the degree $2n$. This characteristic is recommended for use in diagnosing the source of vibrations in machines which are esculated to regimes close to the second and third critical velocities. Manufacturing and operational experience with rotors with a variable number of revolutions showed that it is impossible to ensure a low level of vibrations over the entire working range of revolutions of the rotor without considering the factor of shaft flexibility. However, only the effect of flexibility of the shaft itself was studied, without considering the flexibility of the component parts of the rotor, such as discs and blades; in addition, in high-revolution machines with composite rotors the elastic deformations of individual parts reach values that have a considerable effect on the dynamic flexing

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S/019/61/000/002/032/111
A156/A027

9,2190 (1164 only)
9,2140 (1001, 1150 only)

AUTHORS: Dyn'kov, B.N., and Samarskaya, M.K.

TITLE: A Method of Manufacturing Electric Contacts.

PERIODICAL: Byulleten' izobreteniy, 1961, No. 2, p. 29

TEXT: Class 21g, 32. No. 135160 (669489/26 of May 7, 1960). Contacts made by this method constitute glued stoppings formed without the use of impact forces. The novelty of this method consists in that in order to increase the reliability of contact between the printed circuit conductor on a thin dielectric base and the common-type conductor, the manufacturing process is as follows: a disc and a lobe are cut out from a tinplated copper foil; a hole of about 1mm in diameter is punched in the dielectric base in the area of the printing circuit conductor; the disc and the lobe are applied to the hole on both sides to cover it in such a way that their tin-plated sections contact the plate; the lobe is welded to the disc and the printed circuit conductor through the above hole.

Card 1/1

USSR UDC: 621.396.6-181.6(088.8)

DYN'KOV, B. N., YEVTEYEV, F. Ye., SAMARSKAYA, M. K., DMITRIYEV, P. A.,
Leningrad Electrical Engineering Institute imeni V. I. Ul'yanov

"A Device for Atomizing Thin-Film Microcircuits"

USSR Author's Certificate No 259209, filed 12 Jul 68, published 28 Apr 70
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V248)

Translation: A device is proposed for atomizing thin-film micromodules. The device contains a vacuum chamber with a mechanism for raising the bell, a drive mechanism for shifting the substrates placed on movable platforms together with masks, a shielding screen, and a locating plate. To improve visual observation of the operation of every atomizer, the upper part of the shielding screen is made in the form of a cylinder equipped with an observation port covered with a cylinder which is made from a transparent material and is connected to a drive containing two braking belts which fit in grooves on a locating ring. On the end of one of these belts is a carrier which fits into the fork of a bimetallic loop connected to a source of current, while the other belt wraps around the locating ring to keep it from turning.

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USSR

UDC: 518:517.944/.947

GULIN, A. V., SAMARSKIY, A. A., Corresponding Member of the Academy of Sciences of the USSR, Institute of Applied Mathematics, Academy of Sciences of the USSR, Moscow

"Stability of Difference Schemes With Non-Self-Adjoint Operators"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 6, 21 Oct 72, pp 1280-1283

Abstract: Let $H$ be a finite-dimensional Hilbert space (real or complex), $A$ and $B$ -- linear operators acting on $H$, $\omega_\tau = \{t_n = n\tau,\ n = 0, 1, \ldots\}$ -- a grid on segment $0 \leqslant t \leqslant T$, $y_n = y(t_n) \in H$ -- functions with values in $H$. The authors consider a two-layer difference scheme (A. A. Samarskiy, Vvedeniye v teoriyu raznostnykh skhem [Introduction to the Theory of Difference Schemes], "Nauka", Moscow, 1971).

$$B\frac{y_{n+1}-y_n}{\tau}+Ay_n=0,\quad n=0,1,\ldots,y_0 \text{ is given} \qquad (1)$$

in which $A$ and $B$ are independence of $n$, and the inverse of $B$ exists.

It is assumed that the self-adjoint positive operator $D$ ($(Dx, x) > 0$ for all $0 \neq x \in H$) and the space $H_D$ is formed which consists of elements $y, v, \ldots \in H$

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USSR

GULIN, A. V., SAMARSKIY, A. A., Doklady Akademii Nauk SSSR, Vol 206, No 6, 21 Oct 72, pp 1280-1283

with scalar product $(y, v)_D = (Dy, v)$ and norm $\|y\|_D = \sqrt{(Dy, y)}$. Scheme (1) is called stable in space $H_D$ if the inequality

$$\|y_{n+1}\|_D \leqslant \|y_n\|_D, \quad n = 0, 1, \ldots \tag{2}$$

is satisfied at any $y_n \in H$ for solution $y_{n+1}$ of problem (1).

Previous papers by the authors (DAN v. 181 No 4 p 808, 1968; v. 181 No 5 p 1042, 1968) gave necessary and sufficient conditions for stability of scheme (1) in spaces $H_A$ and $H_B$ if at least one of the operators ($A$ or $B$) is self-adjoint and positive. The stability conditions were formulated as an inequality between $A$ and $B$. For instance, if $A^* = A > 0$, then the necessary and sufficient condition for stability in $H_A$ takes the form

$$B_0 \geqslant 0{,}5\,\tau A, \quad B_0 = 0{,}5(B + B^*).$$

In this paper the authors consider difference schemes in which both operators ($A$ and $B$) are non-self-adjoint.

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USSR

UDC 533.95:538.4

SAMARSKIY, A. A., Corresponding Member of the Academy of Sciences USSR, KURDYUMOV, S. SP., KULIKOV, YU. N., LESKOV, L. V., POPOV, YU. P., SAVICHEV, V. V., and FILIPPOV, S. S., Institute of Applied Mathematics, Academy of Sciences USSR, Moscow

"Magnetohydrodynamic Model of Unsteady Plasma Acceleration"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 2, 1972, pp 307-310

Abstract: During an experimental study of pulsed plasma accelerators, some physical phenomena were discovered which cannot be explained within the framework of existing simplified models: viz., the existence of a laminated structure for the ejected plasma formation, motion counter to the accelerating ampere force, the presence of high-multiplicity ions in the plasma, heating up of the plasma to high temperatures in narrow sections, etc. Therefore, the authors undertook to calculate the dynamics of plasma formations in pulsed accelerators, with allowance for the spatial distribution of the physical characteristics of the plasma, radiation, and nonlinear effects in the plasma. As a result of computer-aided calculations, density, velocity, temperature,

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SAMARSKIY, A. A., et al., Doklady Akademii Nauk SSSR, Vol 206, No 2, 1972, pp 307-310

current, and the magnetic field along the direction of motion were determined. It is shown that there are nonlinear mechanisms leading to the appearance of heated current layers (T-layers) in the medium, separated by intervals of relatively cold gas. The T-layers evolve and generate shock waves which propagate on both sides, and this leads in turn to the production of new T-layers, the formation of plasma clusters and their interaction, the return motion of the substance, and the appearance of closed current loops in the plasma. A study is made of the energy balance in the accelerator and the time redistribution of individual forms of energy.

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UDC: 518:517.9:538.3

USSR

DEGTYAREV, L. M., SAMARSKIY, A. A., and FAVORSKIY, A. P.

"Numerical Solution of Interior Steady-State Problems in Electrodynamics"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fziki, Vol. 10, No. 6, November-December 1970, pp 1409-1417

Abstract: This paper considers problems connected with the numerical solution of nonselfconjugate boundary problems which arise in the investigation of electric current fields or temperature fields in a medium with anisotropic electroconductivity and thermoconductivity. By changing the approach, the authors transfer the most important characteristics of the operator in the original problem to the difference operator approximating it. A divergent difference system of second-order accuracy is set up for the divergent, positively defined operator of the original boundary problem and is applied to three different problems. These problems

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DEGTYAREV, L.M., SAMARSKIY, A.A., and FAVORSKIY, A.P., Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 10, No 6, November-December 1970, pp 1409-1417

are: two-dimensional effects in boundary zones of a magnetic field or electrodes; ionization instability in a low-temperature magnetized plasma; and the two-dimensional problem of the introduction of an ultrasonic flow of conducting gas into a magnetic field.
The authors express gratitude to I. V. Fryazinov.

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USSR

UDC 518:517.944/.947

SAMARSKIY, A. A., FRYAZINOV, I. V., Moscow

"On the Convergence of Locally Homogeneous Schemes for the Solution of a Multi-dimensional Heat Conductivity Equation on Nonuniform Grids"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No. 3, May/Jun 71, pp 642-657

Abstract: The problem of the convergence of a locally homogeneous scheme for the solution of the first boundary value problem in an arbitrary region and the second and third boundary value problems in stepped regions for a heat conductivity equation not containing mixed derivatives on a sequence of nonuniform grids is discussed. It is established that the convergence of these schemes in a grid norm $C$ on a sequence of nonuniform grids is at the rate $O(h^2 \ln(V_0/H_*) + \tau)$;

where $\tau$ is the step of the grid with respect to time, $V_0$ is the volume of the region $\bar{G}$, and $h$ is the maximum step of the three-dimensional lattice (grid) $R^h_p$:

$$h = \max_{x_i \in \bar{G}} \max_{1 \leqslant \alpha \leqslant p} h_\alpha(x_i),$$

USSR

SAMARSKIY, A. A., FRYAZINOV, I. V., Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, No. 3, May/Jun 71, pp 642-657

where $h_\alpha(x_i)$ is the average step of the grid $R^h_p$ at the node $x_i$ in the direction of the coordinate axis $ox_\alpha$ ( $\alpha = 1, 2, \ldots, p$, where $p$ is the number of measurements); $H_*$ is the minimum volume of the mesh

$$H_* = \min_{x_i \in \overline{G}} H(x_i), \qquad H(x_i) = \prod_{\alpha=1}^{p} h_\alpha(x_i).$$

The maximum principle and the method of energy inequalities, which make it possible to obtain an evaluation of the solution of the difference problem in the grid norm $L_{2n}$, where $n$ is an integer, are used to evaluate the rate of convergence of the scheme on a nonuniform grid. Convergence in the grid norm $C$ follows from this evaluation. Negative operators are used as difference operators for any nonuniform grid in an arbitrary region.

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USSR

SAMARSKIY, A. A.; et al (Moscow)

"Self-Consistent Problem of a Strong Discharge in a Plasma"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki; November-December, 1970; pp 1447-57

ABSTRACT: Self-consistent solutions in which the mass of a plasma in a discharge does not vary with time are studied. It is shown that such types of solution exist only with sufficiently large values of the thermal conductivity coefficient. It is established that under given conditions a high-temperature T-layer exists in the self-consistent mode. Conclusions are drawn concerning the effect of thermal conductivity on its structure. An analysis of self-consistent solutions is supplemented by the numerical calculation of a system of magnetohydrodynamic equations for the self-consistent as well as the "near-self-consistent" region of variation of the parameters.

The article includes 21 equations, 5 figures. There are 12 references.

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1/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--COMPLETELY CONSERVATIVE DIFFERENCE SCHEMES FOR THE GASDYNAMICS EQUATIONS IN EULER VARIABLES -U-

AUTHOR-(02)-POPOV, YU.P., SAMARSKIY, A.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL VYCHISLITEL'NOI MATEMAITKI I MATEMATICHESKOI FIZIKI, VOL. 19, MAY-JUNE 1970, P. 773-779

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--DIFFERENCE METHOD, GAS DYNAMICS, INDEPENDENT VARIABLE, APPROXIMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605007/D03 STEP NO--UR/0208/70/010/000/0773/0779

CIRC ACCESSION NO--AP0139876

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

2/2 026

CIRC ACCESSION NO--AP0139876

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSTRUCTION OF COMPLETELY CONSERVATIVE DIFFERENCE SCHEMES WITH FIRST AND SECOND ORDERS OF APPROXIMATION FOR THE GASDYNAMICS EQUATIONS IN EULER VARIABLES. THESE CONSERVATIVE DIFFERENCE SCHEMES HAVE CERTAIN QUANTITATIVE ADVANTAGES OVER OTHER SCHEMES OF THE SAME ORDERS OF APPROXIMATION IN THE CASE OD DISCONTINUOUS AND HIGHLY VARYING SOLUTIONS. IN PARTICULAR, IN CONTRAST TO OTHER SCHEMES, THE IMBALANCES IN COMPLETELY CONSERVATIVE SCHEMES ARE EXACTLY EQUAL TO ZERO.

UNCLASSIFIED

USSR

POPOV, Yu. P., and SAMARSKIY, A. A., Moscow

"Fully Conservative Difference Schemes for the Equations of Magnetohydrodynamics"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 10, No 4, Jul/Aug 70, pp 990-998

Abstract: Difference schemes for the equations of magnetohydrodynamics in Lagrange mass coordinates are considered for the case of one space variable, and fully conservative difference schemes are constructed with a first and second order of approximation. It is noted that ordinary difference schemes, including conservative schemes, which are used to approximate a system of gasdynamic equations have the shortcoming that the energy balance relationships break down. A so-called "fully conservative" class of schemes which are free from this defect is described. Not only are the difference analogs of the fundamental laws for the conservation of mass, momentum, and total energy fulfilled, as for ordinary conservative schemes, but also a detailed energy balance holds: i.e., a balance in terms of individual forms of energy - internal and kinetic. A fully conservative difference scheme can be obtained by an integro-interpolation method with the observance of a certain formal selection rule. The energy equation in gasdynamics can be described in different forms: a divergent form describing the

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USSR

POPOV, Yu. P., and SAMARSKIY, A. A., Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 10, No 4, Jul/Aug 70, pp 990-998

change of the total energy in time, a nondivergent form expressing the change in internal energy, and an entropy form. These forms are equivalent in the differential form: i.e., They reduce to one another with the aid of the remaining equations of the system. In the difference form this property of equivalence generally does not occur and holds only for fully conservative schemes: fully conservative difference schemes simultaneously approximate the possible equivalent forms of the initial differential system of equations. Fully conservative difference schemes approximating the system of equations of magnetohydrodynamics were used in calculating a high-current discharge in plasma. The calculations show that a complex magnetohydrodynamic flow arises with large spatial gradients and sharp changes in the parameters with time. A calculation of this problem by ordinary implicit schemes with nondivergent energy equations gave an imbalance in the total energy which was, in certain cases, 20-50% of the total energy of the system; this yielded the physically absurd result that the energy coming from the system in the form of optical radiation exceeded the initial energy supply in the capacitor bank by the end of the process. The application of fully conservative schemes avoided this defect.

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USSR

UDC 533.951.8

BUGAREV, A. V., DEGTYAREV, L. M., SAMARSKIY, A. A., Corresponding Member of the Academy of Sciences USSR, FAVORSKIY, A. P.

"Flow of a Supersonic Conducting Gas in an Inhomogeneous Magnetic Field"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 3, 1970, pp 520-523

Abstract: A supersonic homogeneous gas flow with finite electrical conductivity in a plane channel of constant width is studied. An external magnetic field is applied at time t = 0. It is assumed that the magnetic Reynolds number is small and that the magnetic field $H_z$ is a given function of the x-coordinate. The nonstationary magnetohydrodynamic equations for the system are given. It is assumed that the flow at entry is supersonic ($M_1$ = 2.92). Previous analytical solutions of this problem have assumed that $R_m$ is much less than 1, but since this is not always valid, it is not assumed here and numerical methods are applied. Changes in the flow parameters at entry into and exit from the magnetic field are graphed and analyzed. The following conclusions are drawn: 1. A considerable rearrangement of the

USSR

BUGAREV, A. V., et al, Doklady Akademii Nauk SSSR, Vol 192, No 3, 1970, pp 520-523

supersonic flow and the electric current field can occur under finite values of $R_m$. 2. The degree of retardation of the flow and its inhomogeneity in the transverse cross section are intensified with an increase in $R_m$. There is a critical value of $R_m$ which, if exceeded, leads to considerable restructuring of the flow to supersonic. The value of the integral joule heating is established asymptotically with respect to $R_m$. 3. A smooth change in the magnetic field reduces the degree of retardation of the flow but worsens its homogeneity over the cross section. 4. A considerable pressure and velocity gradient occurs along the wall which can effect flow in the boundary layer.

2/2

USSR

ZHAKHAROV, A. V., SAMARSKIY, A. A., SVESHNIKOV, A. G.

"Application of the Large Particle Method to Calculating the Motion of a Charged Beam in an Electromagnetic Field, Considering the Space Charge of the Beam"

Moscow, Vychislitel'nyye Metody i Programmirovaniye, XVI, 1971, pp 225-243

Abstract: The large particle method is used in the nonstationary problem of calculating the motion of a charged beam in an electromagnetic field, considering the space charge of the beam. The study was made to discover a number of procedural problems in particular, the problems connecting with selecting the numerical method of determining the charge particle density. The essence of the method consists in subdividing the region of existence of the charge at the initial point in time into small volumes $\Delta V$ and concentrating each charge contained in the volume $\Delta V$ at the center of inertia of the volume $\Delta V$. The charge obtained in this way is considered a "large particle." The i-th particle contains $M_i \gg 1$ elementary charges.

The motion of the large particles is defined by the system of equations coinciding, with respect to form, with the equations of motion of an elementary charge:

$$d\vec{r}/dt = \vec{v}, \quad d\vec{v}/dt = e/m(\vec{E} + (1/c)[\vec{v}, \vec{H}]).$$

USSR

ZHAKHAROV, A. V., et al., Vychislitel'nyye Metody i Programmirovaniye, XVI, 1971, pp 225-243

It is assumed that far interactions are essentially greater than near interactions and the latter can be neglected inside $\Delta V$ (the charged particle density is small) and that during a time interval $0 \leq t \leq T_0$ ($T_0$ is the time during which the behavior of the system is studied) the real particles inside $\Delta V$ behave as a unit; this is admissible for a finite $T_0$ and sufficiently small $\Delta V$. The calculations are made in time cycles in which each cycle is divided into three steps: 1) calculation of the electromagnetic field at a fixed point in time $t = T$; 2) calculation of the motion of the large particles during the time interval $T < t \leq T + \Delta T$; and 3) determination of the charge particle density $\rho(\vec{r})$ in the layer $t = T + \Delta T$ by the known values of the coordinates of the particles.

2/2

USSR

UDC 518:517.944/.947

NIKOLAYEV, Ye. S. and SAMARSKIY, A. A.

"Computational Stability of Two-Level and Three-Level Iteration Systems"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No 12, Vol 5, 1972, pp 1197-1207

Abstract: One of the problems in the theory of iterational processes is to obtain the quantitative characteristics which will permit comparing methods differing in structure. This article considers these characteristics for simple double-level iteration and triple-level Chebyshev and stationary iteration processes, with special attention to the characteristic of computational stability. It is assumed that the introduction of the rounding-off error is equivalent to a perturbation of the input data of the iterational system, an approach which permits reduction of the problem of computation accuracy of a method to the study of a problem in input data perturbation. In their analysis, the authors consider an operational equation of the first kind, $Au = f$, in real Hilbert space, where A is a linear, self-conjugate operator, while u and f are the sought-for and given elements of that space. The computational stability of these iterational systems is proved, and it is shown that the coefficients in the evaluations for that



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202810002-4"

USSR

NIKOLAYEV, Ye. S. and SAMARSKIY, A. A., Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No 12, Vol 5, 1972, pp 1197-1207

proof depend only on the dimensionless parameter $\xi = \alpha_1/\alpha_2$, where $\alpha_1$ and $\alpha_2$ are limits of the spectrum of operator A or equivalence constants of A and a second operator B of the iterational system.

2/2

USSR

UDC 517.949.21

NIKOLAYEV, Ye. S. and SAMARSKIY, A. A., Corresponding Member of the USSR Academy of Sciences, M. V. Lomonosov Moscow State University

"Methods of Numerically Solving the Dirichlet Problem of the Poisson Equation in Any Number of Dimensions"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 4, 1972, pp 815-818

Abstract: A new difference system is proposed for raising the order of accuracy for the Poisson equation in a p-dimensional parallelepiped with the characteristic of strong ellipticity for any $p \geqslant 2$. For the solution, iteration methods of the variable directions and alternately triangular with Chebyshev and cyclical sets of parameters are used. Comparison of this method with those of earlier papers (e.g., A. A. Samarskiy, et al., Zhurn. vychislit. matem. i matem. fiz., 4, No 6, 1964) shows that the methods considered in this paper can be carried out with fewer iterations to achieve the same degree of accuracy. The order of accuracy of this new method is $O(|h|^4)$. It is noted that the difference system can be generalized for the case of the third boundary value problem in the p-dimensional parallelepiped.

1/1

USSR

UDC 518 : 517.944/.947

NIKOLAYEV, Ye. S., and SAMARSKIY, A. A. (Moscow)

"Selection of Iteration Parameters in Richardson's Method"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 4, Jul-Aug 72, pp 960-973

Abstract: The article gives a description of Richardson's method for solving an operator equation of the first kind in a Hilbert space and the ordering of the set of parameters for the case $n = 2^p$ for which the method becomes numerically stable. This order was suggested in an article by one of the authors (Samarskiy) as well as in an article by V. N. Lebedev and S. A. Finogenov. Two theorems are formulated on computational stability, and the described parameter ordering method is generalized for the case of an arbitrary number of parameters n. Results are given for an experimental study of the computational stability of the method with the described set of parameters.

1/1

USSR

UDC 517.864

TIKHONOV, A. N., SAMARSKIY, A. A., and ARSEN'YEV, A. A. (Moscow)

"On a Method of Asymptotic Integral Evaluations"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 4, Jul-Aug 72, pp 1005-1012

Abstract: In earlier articles dealing with the problem of finding the asymptotic behavior of definite integrals with a kernel of the delta-function type, the authors encountered a specific difficulty: viz., the fact that termwise integration of the asymptotic expression for the integrand leads to formally infinite coefficients for the asymptotic behavior of the integral -- a situation which is characteristic of many asymptotic problems. The present article suggests a special method of asymptotic integral evaluations to overcome this difficulty, based on recurrence relations derived in the earlier articles. The asymptotic behavior of integrals on a finite interval and an infinite interval is considered, and the fundamental formula of the proposed method is given.

1/1

Miscellaneous

USSR

UDC 665.6.65.011.56

SAMARSKIY, A. G.

"Equipping Petrochemical Plants with Automation Systems"

Avtomatiz i Kontrol'no-izmerit. pribory. Nauch-Tekhn. Sb., [Automation and Testing-measuring Devices, Scientific and Technical Collection], 1971, No. 9, pp 12-14. (Translated from Referativnyy Zhurnal Khimiya, No 4, Moscow, 1972, Abstract No 4P109 from the resume).

Translation: Problems of equipping petrochemical plants with automation systems are studied on the example of a plant for pyrolysis and gas-separation of ethylene and propylene, and suggestions are given for increasing the level of automation of these processes.

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USSR UDC: 681.326.3

NEMENMAN, M. Ye., PYKHTIN, V. Ya., MAL'TSEVA, V. A., SAMARSKIY, A. S., MALYAVSKIY, Ye. Ye., TORIKASHVILI, V. V.

"A Device for Debugging Programs"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 24, 1970, Soviet Patent No 277410, Class 42, Filed 21 April 1969, p 133

Abstract: This Author's Certificate introduces a device for debugging programs which contains a control unit, a switching module, a unit for data reception and output, a monitoring unit, and a decoder register. As a distinguishing feature of the patent, speed and reliability in program debugging are improved by incorporating into the device an interruption flip-flop; an automatic switching flip-flop; reset flip-flops; four rows of tubes; and AND, OR, and NOT logic circuits. The operation code input lines are connected to the inputs of the first row of tubes, the second inputs of these tubes being connected through the NOT circuit to the input of the OR circuit and to the inputs of the fourth row of tubes. The second inputs of the fourth row of tubes are connected to the first output of the control unit. The outputs of the first and fourth rows of tubes are connected to the inputs of the decoder register, whose

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USSR

NEMENMAN, M. Ye., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 24, 1970, Soviet Patent No 277410, Class 42, Filed 21 April 1969, p 133

output is connected to one input of the control unit. The second output of the control unit is connected to the input of the device at the "one" of the first reset flip-flop. The "one" output of this flip-flop is connected to a tube input, and the second input of the tube is connected to the third output of the control unit. The output of the second tube is connected to the input of the device at the "zero" of the first reset flip-flop and to the input of the device at the "one" of the second reset flip-flop. The "zero" output of the first reset flip-flop is connected to the input of the third tube, the second input of this tube being connected to the fourth output of the control unit. The output of the third tube is connected to the first input of the monitoring unit, whose first output is connected to the input of the device at the "one" of the interruption flip-flop, input of the device at the "zero" of this flip-flop being connected to the fifth output of the control unit. The "one" output of the interruption flip-flop is connected to the second input of the monitoring unit. The second output of the monitoring unit is connected to the device at the "one" of the automatic switching flip-flop, the

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USSR

NEMENMAN, N. Ye., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 24, 1970, Soviet Patent No 277410, Class 42, Filed 21 April 1969, p 133

input of the device at the "zero" of this flip-flop being connected to the first output of the switching module. The second output of the switching module is connected to the input of the device at the "zero" of the second reset flip-flop, the "one" output of this flip-flop being connected to the first input of the switching module and to the first input of the AND circuit. The second input of the AND circuit is connected to the "zero" output of the interruption flip-flop, while the output of the AND circuit is connected to the first input of the OR circuit. The second input of the OR circuit is connected to the "one" output of the automatic switching flip-flop and to the second input of the switching module, the third input of the switching module being connected to the sixth output of the control unit, while the third output of the switching module is connected to the second input of the control unit, and the fourth output of the control unit is connected to the data output unit.

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USSR

ALEKSEYEVSKIY, N. Ye., SAMARSKIY, Yu. A. (Institute of Physical Problems, USSR Academy of Sciences)

"Investigation of Magnetic Hyperfine Interaction for Impurity Atoms of Tin in Dilute Solid Pd-Co Solutions"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, April 1973, pp 1342-1350

Abstract: Magnetic hyperfine interaction for impurity atoms of $Sn^{119}$ in Pd-Co alloys is investigated by the $\gamma$-resonance technique for Co concentrations ranging from 0.3 to 5 at.% when direct exchange interaction between the 3d atoms should be absent. Magnetic measurements were performed to determine the Curie temperature ($T_c$) and mean magnetic moments of the alloys. It is found that the dependence of $T_c$ on the Co content in Pd is in good agreement with the theoretical predictions. Investigations of the Mössbauer effect show that the effective magnetic field at the nuclei of impurity atoms of tin increases monotonically with an increase of the Co concentration in the alloys and reaches $9 \pm 1$ koersteds for a sample with the highest Co concentration (5 at.%). The field is positive. The magnetic measurements show that in the range of Co concentrations in Pd investigated, the effective

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202810002-4"

USSR

ALEKSEYEVSKIY, N. Ye., SAMARSKIY, Yu. A., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, April 1973, pp 1342-1350

field strength at $Sn^{119}$ nuclei is proportional to the mean magnetic moment per alloy atom. In a Pd-Co (2 at.%)-Sn(y) alloy the field strength $H_{eff}$ at the Sn atomic nuclei remains constant, within the limits of experimental error, upon variation of the tin impurity from 0.2 to 6.0 at.%.

2/2

USSR

UDC 538.221

ALEKSEYEVSKIY, N. Ye., Corresponding Member of the Academy of Sciences of the USSR, and SAMARSKIY, Yu. A.

"On the Sign of the Effective Magnetic Field in the Nuclei of Sn Impurity Atoms in Dilute Solid Solutions of Pd-Co"

Moscow, Doklady Akademii Nauk SSSR, Vol 109, No 5, 11 Apr 73, pp 1057-1059

Abstract: Previous studies have shown that at low concentrations of Co in Pd the effective magnetic field on the nuclei of Co atoms is positive, although it is negative in pure Co, and that in areas of low Co concentration in Pd the effective field on the Sn nuclei increases with increasing Co concentration, while that on the Co nuclei decreases. This study covers the sign of the effective magnetic field on Sn nuclei in areas of low Co concentration where exchange interactions among the 3d-atoms are absent. It was found that the magnetization at saturation was directly proportional to the Co concentration and that the external field strength at which saturation occurred was always greater than the corresponding effective magnetic field in the nuclei of the tin atoms in the absence of an external field, so that the standard method of determining the sign of the spontaneous field by applying a saturating field could lead to an error. This was avoided by measuring

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ALEKSEYEVSKIY, N. Ye., and SAMARSKIY, Yu. A., Doklady Akademii Nauk SSSR, Vol 109, No 5, 11 Apr 73, pp 1057-1059

the Mossbauer effect absorption spectra for various external field values. The strength of the effective field in the Sn nuclei was determined from the width of the absorption lines. It would be expected that a negative sign of the spontaneous field in the tin nuclei would lead to a minimum in the measured effective field. This was not observed, leading to the conclusion that the field was positive, a conclusion which agrees with other results for Sn in ferro-magnetic metals.

2/2

1/2 044 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--OVERLAPPING PEAK TRAINS OF GIANT LASER PULSES AND PHOTON ECHO

GENERATION -U-

AUTHOR-(02)-NAGIBAROV, V.R., SAMARTSEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--CHEMICAL PHYSICS LETTERS, VOL. 5, MAR. 1, 1970, P. 61-63

DATE PUBLISHED--01MAR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PHOTON, LASER PULSE, GLASS PROPERTY, WAVE PROPAGATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0732 STEP NO--NE/0000/70/005/000/0061/0063

CIRC ACCESSION NO--AP0111925

UNCLASSIFIED

2/2 044 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0111925

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUGGESTION THAT A SUPERPOSITION OF TRAINS OF GIANT PULSES BE USED FOR THE PRODUCTION OF COHERENT PHOTON RESPONSES IN LIQUIDS AND GLASSES. THE CONDITIONS FOR SUCH A GENERATION ARE DISCUSSED. THE TIME AT WHICH THE PHOTON ECHOES APPEAR AND THEIR WAVE VECTORS FOR A SUCCESSION OF FIVE PULSES ARE TABULATED. IT IS POINTED OUT THAT FOR ACHIEVING A SPATIAL SEPARATION OF THE COHERENT RESPONSES FROM THE EXCITING RAYS IT IS CONVENIENT TO COMBINE PULSE TRAINS OF THREE AND MORE RAYS. FACILITY: AKADEMIIA NAUK SSSR, FIZIKO-TEKHNICHESKII INSTITUT, KAZAN, USSR.

UNCLASSIFIED

UNCLASSIFIED

TITLE--PEAK STRUCTURE OF LASER PULSE AND PHOTON ECHO -U-

AUTHOR-(04)-KOPVILLEM, U.H., ERSHOV, G.M., NAGIBAROV, V.R., SAMARTSEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS, NETHERLANDS, VOL. 31A, NO. 2, P. 87-8, 26 JAN. 1970

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE LENGTH, PHOTON EMISSION, LASER EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0501

STEP NO--NE/0000/70/031/002/0087/0088

CIRC ACCESSION NO--AP0111694

UNCLASSIFIED

2/2 039 UNCLASSIFIED

CIRC ACCESSION NO--AP0111694 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS GIANT PULSES CONSIST OF MANY ULTRASHORT PEAKS (SIMILAR TO 10 NEGATIVE PRIME13 SEC) THERE IS A POSSIBILITY OF USING THEM FOR THE EXCITING OF PHOTON ECHO IN MEDIA WITH INTENSIVE INNER MOTION (LIQUIDS, GASES, GLASSES AND CRYSTALS AT A TEMPERATURE HIGHER THAN THAT OF LIQUID HELIUM). THE CONDITIONS OF THIS EXCITEMENT ARE DISCUSSED. FACILITY: KAZAN PHYSICAL TECHNICAL INST. ACAD. SCI., USSR.

UNCLASSIFIED

Acc. Nr. AP0050456 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: 4R0051

94710t Reversible and irreversible relaxation processes in gases, and light echo. Samartsev, V. V. (USSR). *Opt. Spektrosk.* 1970, 28(1), 178–81 (Russ). The main source of reversible relaxation processes was the Doppler effect. The form of light echo was governed by an exponential function. Collisions retarded the mixing of the particles and the form of the echo signal was contracted. An equation is given for the case of Brownian movement model. The more common sum of the influence of the collisions on the form of light echo was detd. by the method of kinetic equations. (S. G. Rautian, *et al.*, UFN, 1966.) By the irreversible relaxation processes the collisions of the particles changed the splitting of the studied levels of these particles and the mean value of the function. J. Vachek

1/1

REEL/FRAME
19810435

USSR

UDC 541.13:(546.791+546.799.4)

SAMARTSEVA, A. G., and ZHURAVLEVA, Z. A.

"Separation of Uranium and Plutonium by an Electrochemical Method"

Leningrad, Radiokhimiya, Vol 14, No 1, 1972, pp 94-99

Abstract: A high negative potential for the reduction reaction $Me^{3+} + 3e^- \rightarrow Me$ is characteristic for the transuranium elements in aqueous solutions. During their electrolysis in aqueous solutions, they are precipitated either in the form of slightly soluble hydroxides or as oxides. The analyses for $U^{233}$ and $Pu^{239}$ were made by measuring the $\alpha$ activity with about a 1% precision. A number of samples were checked on a multichannel amplitude $\gamma$-spectrometer [multichannel analyzer]. The pH was measured to ±0.02 units with a glass electrode pH meter. The separation was made from formic, citric and ascorbic acids and plotted as a function of the Ph vs. the current density. A study of the kinetics for the separation of U from Pu was made in formic acid. The three figures summarize the data obtained.

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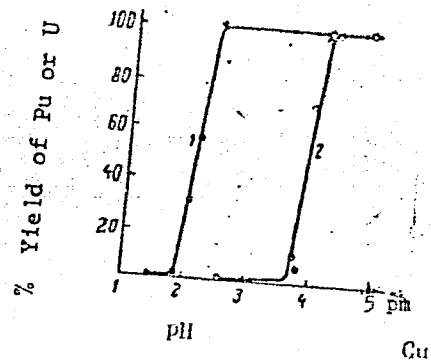
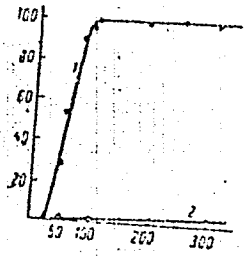
USSR

SMARTSEVA, A. G., and ZHURAVLEVA, Z. A., Radiokhimiya, Vol 14, No 1, 1972, pp 94-99



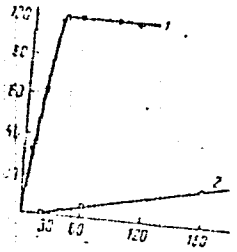

pH

Fig 1




Current density - ma/cm$^2$

Fig 2




Time-minutes

Fig 3

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USSR

SAMARTSEVA, A. G., and ZHURAVLEVA, Z. A., Radiokhimiya, Vol 14, No 1, 1972, pp 94-99

Figure 1. Electrochemical separation of $Pu^{(IV)}$ from $U^{(VI)}$ as a function of the pH of the electrolyte; 1 - separation of $Pu^{(IV)}$ at a current density of 100 ma/cm$^2$; 2- separation of $U^{(VI)}$ (electrolysis time was 1 hour). Figure 2. The electrochemical separation of $U^{(VI)}$ and $Pu^{(IV)}$ as a function of the current density at pH = 2.9 and electrolysis time of 1 hour. Figure 3. Kinetics of the electrochemical separation of Pu(IV) in formic acid at a pH = 2.9 and a current density of 100 ma/cm$^2$; 1 - separation of Pu(IV); 2 - separation of $U^{(VI)}$. The organic acid used for figure 1 was formic acid. For citric acid the Pu (IV) curve (1) is shifted about 0.5 pH units to the right and for ascorbic acid the curve is shifted about 1.3 pH units to the right. Values are not given for the separation of U(VI) from citric and ascorbic acid. Optimum conditions for the separation are a 25-30 minute electrolysis in formic acid solution (pH = 2.9) with a current density of 100 ma/cm$^2$. After the second separation the recovery of both U and Pu was greater than 99% with less than 1% contamination by the other element, e.g. by Pu in U, or vice versa.

3/3

USSR

UDC 541.13: (546.791 + 546.799.4)

SAMARTSEVA, A. G., and ZHURAVLEVA, Z. A.

"Separation of Uranium and Plutonium by an Electrochemical Method"

Leningrad, Radiokhimiya, Vol 14, No 1, 1972, pp 94-99

Abstract: A high negative potential for the reduction reaction $Me^{3+} + 3e^- \rightarrow Me$ is characteristic for the transuranium elements in aqueous solutions. During their electrolysis in aqueous solutions, they are precipitated either in the form of slighly soluble hydroxides or as oxides. The analyses for $U^{233}$ and $Pu^{239}$ were made by measuring the α activity with about a 1% precision. A number of samples were checked on a multichannel amplitude α-spectrometer [multichannel analyzer]. The pH was measured to ±0.02 units with a glass electrode pH meter. The separation was made from formic, citric and ascorbic acids and plotted as a function of the pH vs. the current density. A study of the kinetics for the separation of U from Pu was made in formic acid. The three figures summarize the data obtained.

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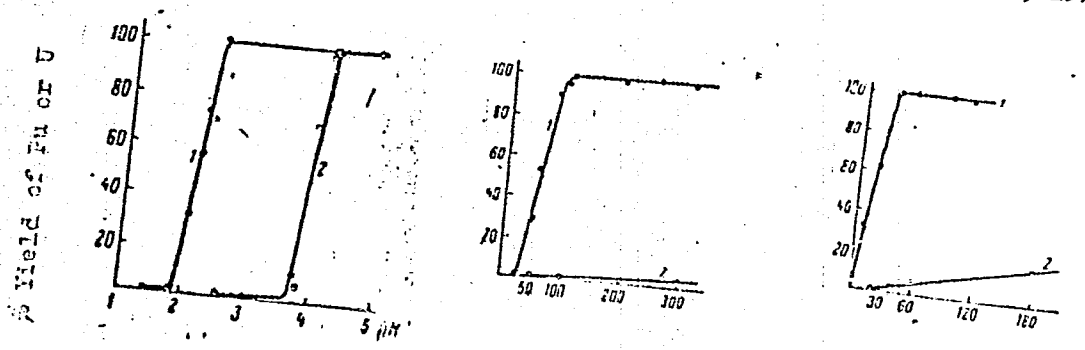
USSR

SAMARTSEVA, A. G., and ZHURAVLEVA, Z. A., Radiokhimiya, Vol 14, No 1, 1972, pp 94-99




pH
Fig. 1

Current density - ma/cm$^2$
Fig. 2

Time - minutes
Fig. 3

Figure 1. Electrochemical separation of Pu(IV) from V(VI) as a function of the pH of the electrolyte: 1 - separation of Pu(IV) at a current density of 100 ma/cm$^2$; 2 - separation of U(VI) (electrolysis time was 1 hour)

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USSR

SAMARTSEVA, A. G., and ZHURAVLEVA, Z. A., Radiokhimiya, Vol 14, No 1, 1972, pp 94-99

Figure 2. The electrochemical separation of U(VI) and Pu(IV) as a function of the current density at pH = 2.9 and electrolysis time of 1 hour. Figure 3. Kinetics of the electrochemical separation of Pu(IV) in formic acid at a pH = 2.9 and a current density of 100 ma/cm2: 1 - separation of Pu(IV); 2- separation of U(VI).

The organic acid used for figure 1 was formic acid. For citric acid the Pu(IV) curve (1) is shifted about 0.5 pH units to the right and for ascorbic acid the curve is shifted about 1.3 pH units to the right. Values are not given for the separation of U(VI) from citric and ascorbic acid. Optimum conditions for the separation are a 25-30 minute electrolysis in formic acid solution (pH = 2.9) with a current density of 100 ma/cm2. After the second separation the recovery of both U and Pu was greater than 99% with less than 1% contamination by the other element, e.g., by Pu in U, or vice versa.

3/3

USSR

UDC 542.91:547.85:547.1'118

REZNIK, V. S., BAKULIN, V. S., IVANOV, B. YE., GOL'DFARB, E. I., and SAMARTSEVA, S. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Synthesis and Properties of Pyrimidinylalkylphosphonic Acids. Communication 7. Synthesis and Properties of Uracylphosphates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 73, pp 879-883

Abstract: The sodium salt of uracyl reacted with diphenylchlorophosphate (I) in absolute benzene to yield 2,4-bis(diphenylphosphonoxy)-pyrimidine. Reaction of the sodium salt of 1,6-dimethyluracyl with (I) in m-xylene gives 1,6-dimethyl-4-(diphenylphosphonoxy)uracyl, and the reaction of the sodium salt of 3,6-dimethyluracyl with (I) in m-xylene gives a mixture of inseparable isomers. All of these uracylphosphates react with alcohols at about 20° giving quantitative yields of uracyls and corresponding alkyldiphenylphosphates.

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USSR

UDC 541.183.5:(546.799.3+546.799.4):546.92

SAMARTSEVA, A. G., ZHURAVLEVA, Z. A.,

"Separation of Neptunium and Plutonium by an Adsorption Method on the Surface of Polished Platinum"

Leningrad, Radiokhimiya, Vol 13, No 6, 1971, pp 857-860

Abstract: A novel method was developed for separation of plutonium from neptunium based on the adsorption of plutonium on the surface of polished platinum. $Pu^{(IV)}$ is adsorbed to the extent of 99.9±0.1% in a wide range of pH values: pH 1.7 to pH 9.8. Tetra- and hexavalent neptunium may be adsorbed on the surface of polished platinum to the extent of 70%, while the pentavalent neptunium is not adsorbed at all. The procedure for the separation of $Pu^{(IV)}$ and $Np^{(V)}$ consisted of two adsorption cycles, after which the mother liquor was transferred to another platinum dish and subjected to electrolysis at pH 2.5 liberating neptunium quantitatively.

1/1

USSR

UDC 543.422.4+541.571.9+577.
26.113

SHAGIDULLIN, R. R., LIPATOVA, I. P., NURETDINOV, I. A., and SAMARTSEVA, S. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan', and Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Hydrogen Bonding with the Participation of P=Se and P=Te Groups"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 6, Aug 73, pp 1363-1365

Abstract: The electron donating ability of the group P=X (X=Se, Te) was studied in the compounds of the type $R_1R_2R_3P=X$ where $R_1$, $R_2$, $R_3$ = Me, Et, Bu, Ph, EtO, EtS, PhO, $Me_2N$, $Et_2N$, and Cl (for X = Se), and Me, $Me_2N$, $Et_2N$ (for X = Te), by determining IR spectral changes due to the formation of hydrogen bonds with the phenolic OH group. It has been established that both the seleno- and tellurophosphoryl groups participate in hydrogen bonding as proton acceptors, the strength of the H-bond depending on the electronic effects of the substituents on the phosphorus atom. The electron donating ability of the P=X groups (X = O, S, Se, Te) in identical

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USSR

SHAGIDULLIN, R. R., et al., Doklady Akademii Nauk SSSR, Vol 211, No 6, Aug 73, pp 1363-1365

media changes considerably when oxygen is replaced by sulfur, but such a change is very small when sulfur is replaced by Se or Te.

2/2

USSR

UDC: 621.318.124:621.318.134:621.762.34

POZDNEV, V. D., SAMARTSEVA, T. A.

"A Method of Making Laminar Ferrite Components"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 30, 1970, Soviet Patent No 282539, Class 21, 31, filed 24 Jun 68, p 85

Abstract: This Author's Certificate introduces: 1. A method of making laminar ferrite components by preparing a conducting paste for the conductors and a ferrite slip, forming a ferrite central layer and ferrite layers with conductors of the conductive paste and the ferrite slip, assembling a matrix from these layers, and pressing and baking the resultant matrix. As a distinguishing feature of the patent, the procedure is designed to produce strong adhesion between the conductors and ferrite and to improve the quality of laminar ferrite components while simultaneously simplifying the technological process. To this end, the conductive paste and the ferrite slip are prepared with the same binder. 2. A modification of this method with the distinguishing feature that an aqueous solution of glycerin-softened polyvinyl alcohol is used as the binder.

1/1

USSR

UDC 621.774.2

MATVEYEV, Yu. M., MAKAROV, I. P., KRYUKOV, V. N., ZUBAREVA, V. A., SAMARYANOV, Yu. V., ANTIPOV, B. F., KOZLOV, D. G., and ZIMINA, N. G., Ural Scientific Research Pipe Institute, Vyksunskiy Metallurgical Plant

"Production of Furnace-Welded Pipes With Oxygen Blowing of Skelp Edges"

Moscow, Metallurg, No 1, Jan 71, pp 34-35

Abstract: The quality of furnace-welded pipe is assessed by the welded seam quality, which is a function of the chemical composition of the metal, reduction in the welding pass, heating temperature, and the finish of the edges to be welded. In order to remove the scale and preheat the metal prior to welding, the edges are blown with high-pressure air. Blowing with oxygen makes it possible to raise the temperature of the edges. Oxygen facilitates the melting of refractory oxides and their removal from the surface of the skelp. The use of oxygen for blowing skelp edges on the furnace welding line of the Vyksunskiy Metallurgical Plant resulted in a marked increase in the quality of pipes. The strength of the weld in cone flaring tests was found to increase more than six-fold and the weld structure improved as well. The yearly savings with the use of oxygen on one mill was about 50,000 rubles.
1/1

USSR

UDC: 621.396.677(088.8)

TSALENCHUK, M. R., SAMARYANOVA, M. A., SHALINOVA, G. F., BYKOVA, T. A., IVANOV, A. F.

"A Device for Monitoring the Working Order of High-Frequency Channels"

USSR Author's Certificate No 265983, filed 10 Jun 68, published 3 Jul 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B103 P)

Translation: The proposed device contains a two-terminal plug to which a high-frequency oscillator is connected with DC power supplies. To simplify and speed up the monitoring process, the oscillator and power supplies are enclosed in the housing of the plug holder.

1/1

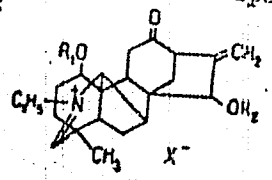
USSR

YUNUSOV, M.S., RASHKES, YA.V., YUNUSOV, S.YU., SAMATOV, A.S., Order of Labor Red Banner Institute of Chemistry,of Plant Substances, Tashkent, Academy of Sciences Uzbek SSR

"Mass Spectra of Alkaloids of the Songorine Type. Structure of Songoramine"

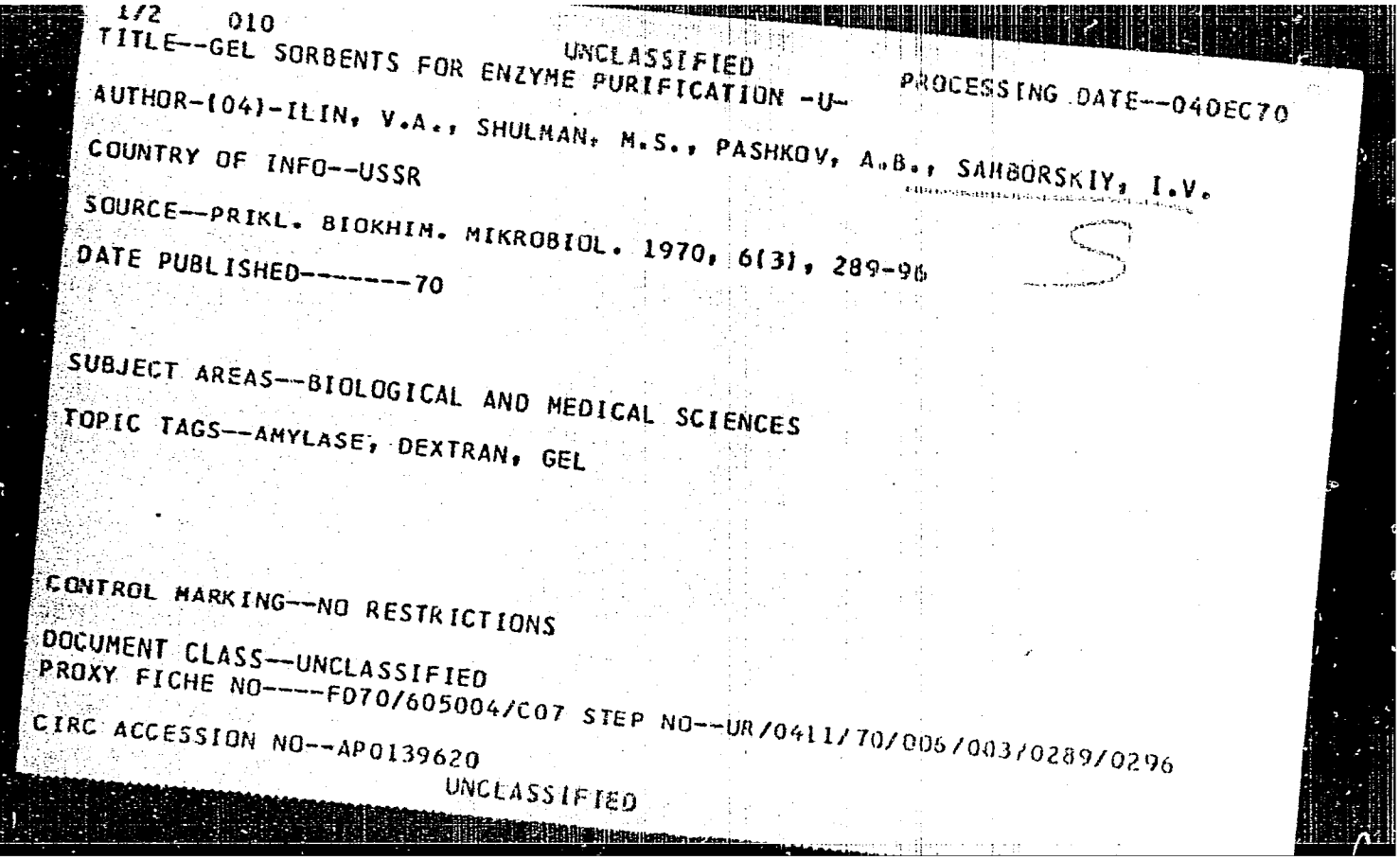
Tashkent, Khimiya Prirodnykh Soyedineniy, No 1, 1970, pp 101-107

Abstract: Analysis of alkaloid mixtures extracted from the tubers of Aconitum karakolicum which grow in the upper regions of the Tyup River (Terskey Altau Range) showed aconitine, songorine and an alkaloid with a melting point of 211-212°C. This base is identified as songoramine. Astudy was made of the mass spectra of songorine, dihydrosongorine, their diacetates, N-desethylsongorine, deutero analogs of songarine and dihydrosongorine. Analysis of chemical and spectral data shows that songoramine has the following structure:




$R_1 = R_2 = H$

Diagrams are given showing the fragmentation of songorine and its derivatives.
1/1



1/2 010 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--GEL SORBENTS FOR ENZYME PURIFICATION -U-

AUTHOR-(04)-ILIN, V.A., SHULMAN, M.S., PASHKOV, A.B., SAMBORSKIY, I.V.

COUNTRY OF INFO--USSR

SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(3), 289-96

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AMYLASE, DEXTRAN, GEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605004/C07 STEP NO--UR/0411/70/006/003/0289/0296

CIRC ACCESSION NO--AP0139620

UNCLASSIFIED

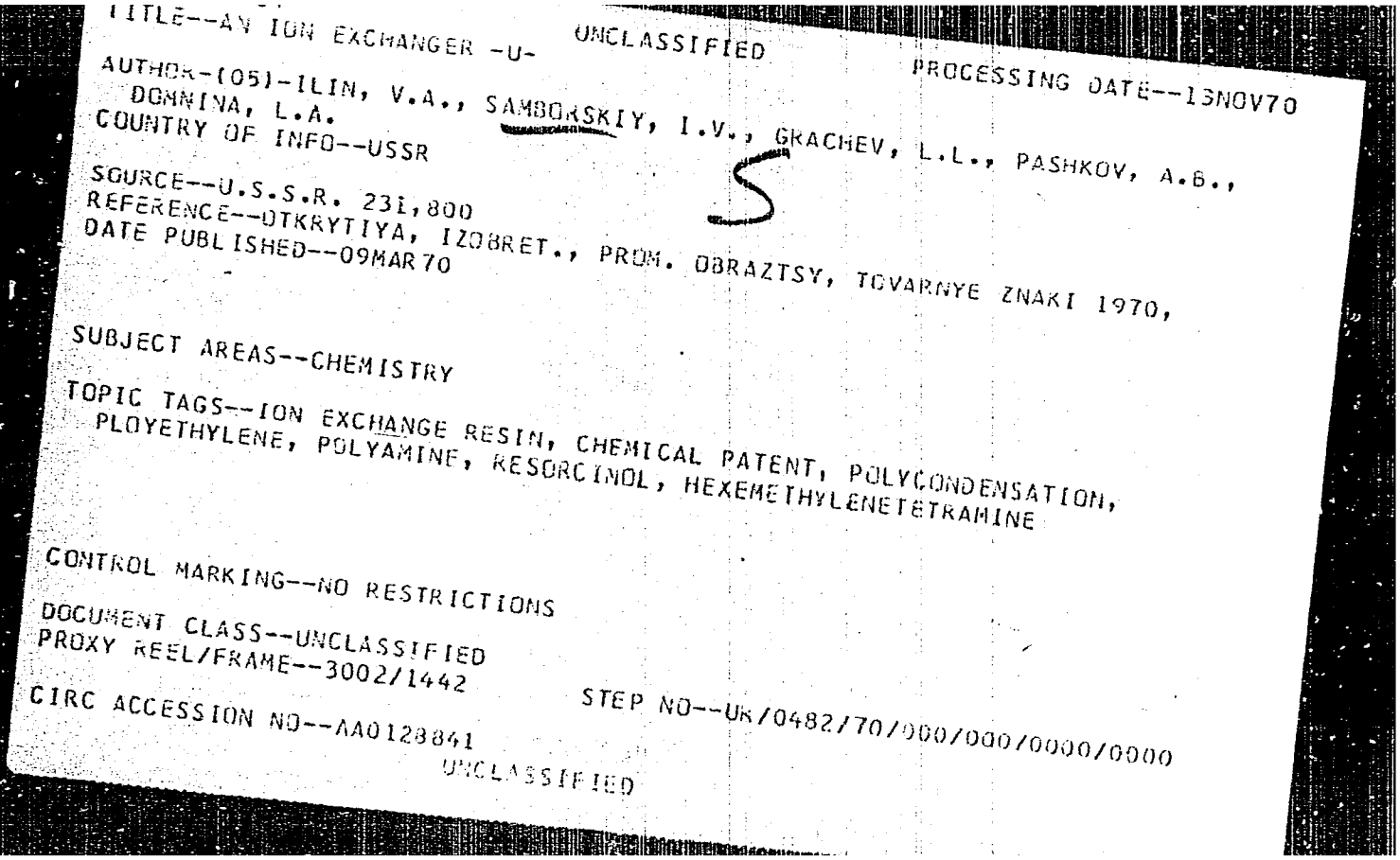
2/2 010 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139620

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GELS WERE OBTAINED FOR EXTG. AMYLASE FROM ORIZIN PC PREPNS. THE CONDENSATION OF DEXTRAN (I) WITH EPICHLOROHYDRIN OLIGOMER (II) (A. F. CHETVERIKOV, ET AL., 1970), I WITH II AND POLYETHYLENE POLYAMINE (III), OR I, II, AND III FOLLOWED BY THE REACTIONS WITH BZCL, DINITROCHLOROBENZENE, OR FURFURAL GAVE GELS WITH ADSORBENT AND ION EXCHANGE CHARACTERISTICS. THE EFFECTS OF THE GEL COMPN. ON ITS ION EXCHANGE, ADSORPTION, AND SWELLING PROPERTIES WERE DETD. THE GELS WITH LOWERED N BASICITY WERE BEST FOR THE EXTN. OF AMYLASE.

FACILITY: RES. INST. PLAST., MOSCOW, USSR.

UNCLASSIFIED



TITLE--AN ION EXCHANGER -U- UNCLASSIFIED

PROCESSING DATE--13NOV70

AUTHOR-(05)-ILIN, V.A., SAMBORSKIY, I.V., GRACHEV, L.L., PASHKOV, A.B., DOMNINA, L.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 231,800

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ION EXCHANGE RESIN, CHEMICAL PATENT, POLYCONDENSATION, PLOYETHYLENE, POLYAMINE, RESORCINOL, HEXEMETHYLENETETRAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1442

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128841

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002202810002-4"

2/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0128841

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ION EXCHANGER WITH GREATER CAPACITY FOR MOLYBDATE AND TUNGSTATE IONS IS PREPD. BY POLYCONDENSATION OF POLYETHYLENE POLYAMINE, RESORCINOL, AND HEXAMETHYLENETETRAMINE.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ION EXCHANGER -U-

AUTHOR-(05)-ILIN, V.A., SAMBORSKIY, I.V., GRACHEV, L.L., PASHKOV, A.B.,
DOMNINA, L.A.
COUNTRY OF INFO--USSR

SOURCE--USSR 231,799
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ION EXCHANGE RESIN, CHEMICAL PATENT, TUNGSTATE, MOLYBDATE, POLYETHYLENE, POLYAMINE, RESORCINOL, FORMALDEHYDE, ORGANIC SULFUR COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1455 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128854
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 012

CIRC ACCESSION NO--AA0128854

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ION EXCHANGER WITH IMPROVED CAPACITY FOR MOLYBDATE AND TUNGSTATE IONS IS PREPD. BY POLYCONDENSATION OF POLYETHYLENE POLYAMINES, RESORCINOL AND HCHO, AND CONTAINS TETRAMETHYLTHIURAM DISULFIDE.

UNCLASSIFIED

UDC 612.62

USSR

TARAKHOVS'KIY, M. L., SAMBROSKA, E. P., MEDVEDEV, B. M., ZADOROZHNA, T. D., OKHRONCHUK, B. V., and LIKHTENSHTEYN, Ye. M., Experimental Department, Kiev Institute of Pediatrics, Obstetrics and Gynecology, and Physiology Laboratory, All Union Institute of Hygiene and Toxicology of Pesticides and Plastics

"The Effect of Permanent and Alternating Magnetic Fields on Some Physiological Functions and Metabolic Processes in White Rats"

Kiev, Fiziologicheskiy Zhurnal, No 4, 1971, pp 452-459

Abstract: Exposure of rats for one month to permanent and alternating magnetic fields (130 to 140 cersteds) significantly altered ovarian function, blood proteins, hemoglobin, erythrocytes, and hematocrit index. Morphological changes in the ovaries, liver, and adrenal glands were more pronounced after the action of the alternating magnetic field. Other quantitative and qualitative changes suggest that the mechanism of action of the two types of magnetic fields differs.

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UNCLASSIFIED PROCESSING DATE--13NOV70

1/2 033

TITLE--INSPECTION PORT AND HIGH PRESSURE MERCURY SEAL FOR STUDYING THE THERMOPHYSICAL PROPERTIES OF SUBSTANCES -U-

AUTHOR-(03)-AKHUNDOV, T.S., SAMBUR, KH.O., IMANOV, SH.YU.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., NEFT GAZ 1970, 13(1), 112-13

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--SEAL, MERCURY, HIGH PRESSURE, PETROLEUM PROPERTY, AROMATIC HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1219 STEP NO--UR/0152/70/013/001/0112/0113

CIRC ACCESSION NO--AT0133216

UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0133216

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HG WAS DISPLACED WHEN THE PRESSURE WAS INCREASED, PRODUCING CLOSING OR BREAKING OF AN ELEC. CIRCUIT. THE LEVEL OF HG IS OBSD. THE APP. WAS RECOMMENDED FOR DETG. THE D. OF AROMATIC HYDROCARBONS, WATER, AND STEAM IS LESS THAN OR EQUAL TO 300 BARS. FOR PRESSURES IS LESS THAN OR EQUAL TO 600 BARS, THE HG SEAL LEVEL IS DETD. ELEC. SCHEMES OF THE APP. ARE PRESENTED. FACILITY: AZERB. INST. NEFTI KHIM. IM. AZIZBEKOVA, BAKU, USSR.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--COMPLEXING OF IRON,III, WITH PHENOL -U-

AUTHOR-(05)-NIKOLSKIY, B.P., PALCHEVSKIY, V.V., CHEGODAYEVA, A.D., YAKUBOV, KH.M., SAMBUR, T.V.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 192(1), 102-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IRON COMPOUND, COMPLEX COMPOUND, PHENOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1204 STEP NO--UR/0020/70/192/001/0102/0104

CIRC ACCESSION NO--AT0134878
UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0134878

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEXING OF FE(III) WITH PHOH AND THE POSSIBLE FORMATION OF THE (FEOPH) PRIME2POSITIVE COMPLEX WAS STUDIED BY MEASURING THE CHANGE IN THE OXIDN. POTENTIAL OF THE FE(III)-FE(II) SYSTEM (USING FE(CLO SUB4) SUB3 AND FE(CLO SUB4) SUB2 IN NACLO SUB4 SOLN.) AT 25DEGREES AS A FUNCTION OF PH, THE ADDUCT CONCN., AND THE CONCNS. OF THE OXIDIZED AND REDUCED FE. THE PH DEPENDENCE CURVES OF THE OXIDN. POTENTIAL IN THE PRESENCE AND IN THE ABSENCE OF PHOH INDICATE THAT PHOH HAS NO EFFECT ON THE HYDROLYSIS OF FE(III). THE BLUE COLOR WHICH APPEARS AT PH GREATER THAN OR EQUAL TO 0.9 CHANGES TO YELLOW AT PH GREATER THAN 2. ADDNL. SPECTROPHOTOMETRIC STUDY OF THE FE(III) PHENOL SYSTEM AT 550 NM REVEALED THAT THE ABSORBANCE OF THE SYSTEM INCREASES WITH INCREASING PHOH CONCN. AND WITH PH OF THE SYSTEM. THE EXPTL. DATA SUGGEST THAT THE COMPLEX RESPONSIBLE FOR THE BLUE COLOR IS FORMED BY THE ADDN. OF PHOH TO THE PRODUCTS OF THE PRIMARY HYDROLYSIS OF FE(III) COMPDS.: (FE (H SUB2 O) SUB6) PRIME3POSITIVE FORMS AND IS FORMED FROM (FE(OH)(H SUB2 O) SUB5)PRIME2POSITIVE PLUS H PRIME+POSITIVE, (FE(OH)(H SUB2 O) SUB5) PRIME2POSITIVE PLUS PHOH FORMS AND IS FORMED FROM FE(OH)(H SUB2 O) SUB4 PHOH) PRIME2POSITIVE. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED